A NEW WAY TO SAVE THE BAY:
HOW THE EVOLVING RELATIONSHIP BETWEEN ENVIRONMENTALISTS AND CHICKEN GROWERS CHANGED CHESAPEAKE BAY ENVIRONMENTALISM

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This document is an analysis of how the relationship between environmentalists, specifically within the Chesapeake Bay Foundation, worked with chicken growers in the Delmarva Peninsula to develop a new strategy for environmental protection and environmental justice within the Chesapeake Bay watershed. In the summer of 1997, the microorganism *Pfiesteria* killed thousands of fish and made over two dozen people sick. Scientists linked the outbreak of *Pfiesteria* to chicken farms in Maryland, and the debate over what to do about *Pfiesteria* set the stage for a new political alliance between environmentalists and chicken growers. Two individuals, Michael Heller and Jim Lewis, were especially important in bringing the formerly adversarial groups together to tackle the problem nutrient pollution from chicken farms caused for the Chesapeake Bay.

The key to success for the environmentalists and chicken growers was an open dialogue facilitated by Heller, on behalf of the environmentalists, and Lewis, representing the chicken growers. Environmentalists learned that the chicken growers were not financially capable of meeting the demands nutrient control legislation made on them to clean up chicken manure from their farms, and as a result, they were able to help legislators design new programs to help growers comply with the law. This thesis reaches the conclusion that no single strategy or approach is enough to completely solve the problems modern society poses for the environment; however, the communication and cooperation displayed by environmentalists and chicken

growers in the Chesapeake Bay watershed is an encouraging sign that different groups can work together and synthesize a solution that combines many different approaches to reach mutual goals.

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1.0 INTRODUCTION

Captain John Smith glowingly described the Chesapeake Bay in a 1612 letter, saying, "Heaven and Earth never agreed better to frame a place for means of habitation."[1] Nearly 400 years later, the Chesapeake Bay remains a unique and remarkable place to live, but the Bay's appeal to humans has come with environmentally harmful consequences. Four centuries of human habitation have devastated the fragile ecosystem of the Bay by wiping out fisheries, destroying habitats, and loading the Bay's water with pollutants. Over the past 40 years, environmentalists managed to halt the decline of the Bay, but the Chesapeake's overall health has barely improved. The Bay's oyster and crab populations are at all-time lows, and a steady influx of nutrients contributes to large anoxic zone in the Bay each summer where the lack of dissolved oxygen kills off any aquatic life that cannot swim away. Environmentalists employed numerous strategies to save the Bay, but aside from a few small victories, the Bay remains severely imperiled. However, recent developments in the relationship between environmentalists and chicken growers[*] enabled these two groups to achieve some remarkable successes in a little over a decade.

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[1] "Historical Maps," *UlsterVirginia.com*, The Ulster-Scots Agency, 9 Mar. 2009, <http://www.ulstervirginia.com/historicalmaps.asp>.

[*] In this paper, individuals who raise chickens under contract from the integrated poultry firms shall be called chicken "growers." They are also known as "chicken farmers" because in addition to raising chickens, many also own and operate their own farms. However, "grower" is the industry term for these individuals and it is the term they most commonly use in reference to themselves. The term "chicken farmer" does appear in this paper in some direct quotations, but the author has made every attempt to be consistent in the use of the term "grower" when

This paper begins by chronicling the history of these two groups, but its focus is on a few pivotal years from 1997-2001 when the combination of an ecological disaster and the endeavors of a few individuals led to a fundamental change in the relationship between environmentalists and chicken growers. This new relationship prompted environmentalists to develop a broader conception of ecological problems that connected them to the unique social and economic contexts ultimately responsible for creating ecological harm. Prior to 1997, environmental laws led to an adversarial relationship between environmentalists and growers. When the toxic microorganism *Pfiesteria piscidia* killed thousands of fish and made over two dozen people sick in the Chesapeake Bay region, it set the stage for a series of meetings between the Chesapeake Bay Foundation (CBF) and the Delmarva Poultry Justice Alliance (DPJA). These meetings resulted in a tentative political coalition, that with the leadership of a few key individuals—Michael Heller of the CBF, and Jim Lewis and Carol Morison of the DPJA—overcame the ignorance and animosity between environmentalists and growers. After surviving a rocky start, the coalition changed the nature of the growers' and environmentalists' relationship from one that was combative to one that was cooperative. The cooperation among environmentalists and growers enabled environmental leaders to develop a broader vision for solving environmental problems. This broader vision enabled the CBF-DPJA coalition to develop into a powerful political force capable of lobbying for legislation to clean up the Bay in a new way: instead of setting levels of pollution control and demanding that growers comply, the CBF and DPJA cooperated to help legislators develop laws that gave the chicken growers the resources they needed to reduce nutrient pollution from their farms.

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referencing those individuals who raise chickens and the term "farmer" in reference to those individuals who own farms but do not raise chickens.

The significance of the coalition between the CBF and DPJA is that it was the start of a new style of environmentalism in the Chesapeake Bay. Prior to 1997, environmentalists had a narrow conception of environmental problems. They saw ecological issues in isolation from the broader social context that created the problems in the first place. This narrow vision led to an overreliance on a strategy of "top-down" control where they worked with legislators to pass coercive laws to stop people and companies from damaging the Bay's ecosystem. "Top-down" approaches worked in some situations, but Bay environmentalists applied this strategy to all the ecological problems facing the Bay. The narrow vision of the top-down approach alienated chicken growers and failed to reduce nutrient pollution coming from their chicken operations. The cooperative CBF-DPJA coalition employed a broader vision that placed environmental problems within the social and economic contexts that created them. Working together, environmentalists and chicken growers designed equitable and effective laws that succeeded at reducing nutrient pollution coming from chicken farms.

This paper divides the exploration of the changing relationship between environmentalists and chicken growers into four sections. The first two sections examine the history of the environmental movement in the Bay and the rise of the vertically integrated chicken industry in the Delmarva Peninsula. These sections detail how growers and environmentalists came to be at odds with one another and explains why environmental laws prior to 1997 failed to reduce nutrient pollution from chicken farms. The third section describes how the coalition formed between the CBF and DPJA. Largely based on firsthand testimony, it focuses on Jim Lewis and Michael Heller as the central actors in the formation of the coalition. The fourth section examines how cooperation between environmentalists and chicken growers enabled the emerging coalition to survive a bitter controversy over deciding how to reduce

nutrient pollution that arose in response to the *Pfiesteria* crisis. The last part of the paper discusses the successes of this coalition, with an emphasis on the past few years. The coalition's activities mainly focused on reducing nutrient pollution from chicken farms; however, recent successes demonstrate the cooperative strategy's potential to redefine Chesapeake Bay environmentalism in terms of a broader conception of the social and economic context that creates ecological threats. By building working relationships with people across the social spectrum, environmentalists can design legislation that heals the Chesapeake without harming those who make the Bay region their home.

2.0 THE DEVELOPMENT OF CHESAPEAKE BAY ENVIRONMENTALISM'S INITIAL ATTEMPTS TO CONTROL NUTRIENT POLLUTION

Early developments in Bay environmentalism led to nutrient pollution control strategies that employed narrowly focused tactics such as regulatory control and technological innovation. Before the *Pfiesteria* crisis in 1997, Bay environmentalists worked almost exclusively with state and federal officials to create top-down plans and legislation that demanded compliance instead of offering cooperation. Environmentalists used these methods effectively against nutrient pollution caused by detergents and inadequate sewer systems; however, with non-point source agricultural runoff, top-down controls fared poorly. These controls failed because they did not consider the economic and social problems of people like the chicken growers. Additionally, the coercive nature of the control plans provoked anti-environmental backlash.

The movement to "Save the Bay" began in earnest during the mid-20th century, when declining oyster and crab harvests, among other problems, raised concerns about the health of the Chesapeake. In 1964, anxiousness about these problems prompted a group of worried citizens to meet with then-Congressman Rogers C.B. Morton in Baltimore to discuss what the government could do to help them protect the Bay from the emerging threats of "more boats, more people,

more houses, poor sewage treatment, [and] dirty industrial discharges."[2] These recreational sailors, waterfowl hunters, and anglers were not experts on environmental problems, but they were concerned and conscientious citizens who feared that the Bay was quickly deteriorating. Instead of offering Congressional support, Morton suggested that a private sector organization would more effectively serve the Bay's interests than the bulky apparatus of the federal government.[3] Heeding Morton's advice, members of this initial group chartered the Chesapeake Bay Foundation (CBF) in 1967.

The CBF is the region's largest, best known, and most influential environmental organization, and it has been nationally recognized for its achievements.[*] As Michael Heller put it, "without the Bay Foundation, there wouldn't be such a strong movement to save the Bay."[4] Today, the CBF has an annual operating budget of over $23 million dollars, a staff of 170, and over 200,000 members,[5] but in 1970, the CBF had only 2,000 members and a staff of just three.[6] With limited resources in its early years, the CBF focused on raising awareness about the problems facing the Chesapeake. These early efforts focused on issues such as overfishing, the discharge of industrial and toxic waste, and habitat protection, but nutrient pollution soon became one of the CBF's top priorities.[7]

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[2] "Our History," *Chesapeake Bay Foundation*, Chesapeake Bay Foundation, <http://www.cbf.org/site/PageServer?pagename=about_sub_mission_history>.
[3] Ibid.
[*] The CBF has won numerous national awards and honors, including the 1992 Presidential Medal for Environmental Excellence, the nation's most prestigious environmental award, and the Foundation's headquarters, the Merrill Center, was the first building to receive a LEED Platinum certification.
[4] Heller, Michael, Telephone interview with author, 9 July 2008.
[5] *Annual Report 2008*,Chesapeake Bay Foundation, Annapolis: Chesapeake Bay Foundation, 2009, 20 Feb 2009, < http://www.cbf.org/site/DocServer/CBF_AR2008.pdf?docID=13623>.
[6] "Our History," *Chesapeake Bay Foundation*, Chesapeake Bay Foundation, <http://www.cbf.org/site/PageServer?pagename=about_sub_mission_history>.
[7] Ibid.

Unlike the loss of habitat such as wetlands, overfishing, or even toxic waste, nutrient pollution is not an easily observable phenomenon; consequently, environmentalists did not initially perceive it to be a major threat to the Bay. Nutrient pollution, loosely defined as an excess discharge of nitrogen and phosphorus into a waterway, is an insidious threat because it harms the Bay at a microscopic level, unobservable to the naked eye. Cultural eutrophication is the technical term for the process by which excess nutrients from human sources lead to the deterioration of a body of water, ultimately resulting in biologically devastating anoxic zones.

As the name indicates, anoxic zones are areas without enough dissolved oxygen to support life. Any organism that does not swim out of the anoxic zone is doomed to death. These zones quickly become devoid of life, earning them the sinister nickname "dead zones." Nutrient pollution causes anoxic zones because the superabundance of nutrients fuels a rapid growth of algae, known as an algae bloom. Although plants do produce oxygen, the net effect of cultural eutrophication is still a reduction in dissolved oxygen. When the algae die, the microorganisms that consume the dead algae use up the dissolved oxygen in the water.[8] In bad years, as much as 40% of the Chesapeake is incapable of supporting most forms of aquatic life.[9] In their annual report, the CBF called nutrient pollution "Enemy No. 1 for the Bay."[10]

Part of the reason that nutrient pollution is such a threat to the Bay is because the unique geological nature of the Bay makes it extremely vulnerable to cultural eutrophication. The Chesapeake Bay is the largest estuary in the United States, with a total surface area of 4,500 square miles. Equally impressive is the Bay's watershed, which encompasses 64,000 square

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[8] "The Chesapeake Bay's Dead Zone," *The Chesapeake Bay Foundation*, 2008, The Chesapeake Bay Foundation, 13 March 2008 <http://www.cbf.org/site/PageServer?pagename=resources_facts_deadzone>.
[9] Ibid.
[10] *Annual Report 2008,*Chesapeake Bay Foundation, Annapolis: Chesapeake Bay Foundation, 2009, 20 Feb 2009, < http://www.cbf.org/site/DocServer/CBF_AR2008.pdf?docID=13623>.

miles over six states and the District of Columbia. Although large in area, the Bay is remarkably shallow; its average depth is only 21 feet. To put this number in perspective, consider that 21 feet is slightly more than a third of the way from home plate to the pitcher's mound in baseball, inside of the NBA's three-point line, and a 21-foot pass would come up well short of a first down in football. The Bay is one of the shallowest bodies of water for its size in the world, and as a result, the ratio of land area to water volume in the Bay is an astounding 2,742 to 1. In other words, this ratio means that every cubic foot of water in the Bay must absorb the runoff from 2,742 square feet of land. The Bay's legendary biological productivity (despite heavy overfishing it still produces 40,000 tons of fish and shellfish a year, making it the most productive estuary in the United States[11]) is due to its shallowness. With so much land draining into so little water, a large and complex web of life arose in the Bay, but anthropogenic nutrient pollution has thrown this delicate balance into disarray.[12]

By the mid-1970s, environmentalists, led by the CBF, realized that nutrient pollution was a problem. Nutrient pollution comes from a variety of sources, mainly agricultural runoff, urban and suburban stormwater runoff, and sewage treatment plants. Initially, the extent and severity of nutrient pollution's impact on the Bay was unknown. As a result, in 1976, the CBF turned to the federal government, and with the help of Senator Charles Mathias of Maryland, a member of the CBF's Board of Trustees, they secured $27 million in funding for a 7-year EPA study of the Bay and its environmental problems. Published in 1983, the EPA's report, *Chesapeake Bay: A Framework For Action*, was a landmark document; it fundamentally shaped the cleanup and restoration efforts for the Bay over the next decade by providing the scientific basis, structural

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[11] "About the Bay." *Alliance for the Chesapeake Bay.* 2006. Alliance for the Chesapeake Bay. <http://www.acb-online.org/about.cfm>.

[12] "Bay-Sic Ratios," Chart, *www.cbf.org*, Chesapeake Bay Foundation, <http://www.cbf.org/site/DocServer/SBaySic013-018.pdf?docID=1603>.

framework, management strategies, and guiding philosophy for Chesapeake Bay environmental protection. The report provided a detailed scientific analysis of the Bay's main problems, and its publication was part of the impetus that led to the *Chesapeake Bay Agreement* (1983), [*] which was the first interstate agreement to develop a coordinated plan for Bay management. While *A Framework For Action* provided important information and ideas for reform, it also contained mistakes and oversights that misguided nutrient pollution control efforts in the Bay over the next 15 years.[13]

The *Framework* study relied almost exclusively on computer simulations with no regard for the need to conduct on-the-ground consulting with the people causing the nutrient pollution problem. The report provides a description of the levels of nutrient pollution in different regions of the Bay and its tributaries, but it never analyzes complex social and economic forces that gave rise to specific sources and causes of nutrient pollution. EPA scientists conducted their study by taking water samples from throughout the watershed and using computer modeling to describe the relative health of the Bay, broken down by region. This one-sided description was overly abstract and lacking in the subtleties that interviews could have provided. While the report contained information about the problems and needs of the Bay, *A Framework For Action* contained no information about the problems and needs of the people that are the ultimate cause of nutrient pollution. The report framed the Bay's problems in such a way that it distanced

[*] The first (1983) *Agreement* was a mere two pages long and contained few specific details about how the states would clean up the Bay. There have since been two subsequent Chesapeake Bay *Agreements*, of 1987 and 2000. The 1987 *Agreement* specified six areas of focus for Bay restoration, along with more detailed pledges to guide the cleanup efforts. The 2000 *Agreement* was a dramatic overhaul that refocused the mission of Bay protection with over 100 specific actions and goals to meet by 2010. The events chronicled in this paper played an important role in leading to the most recent revision of the *Chesapeake Bay Agreement* and many of its goals and actions.

[13] U.S. Environmental Protection Agency, *Chesapeake Bay: A Framework for Action,* (Washingon, DC: GPO, 1983).

environmentalists from the human origins of nutrient pollution and led them to concentrate more on the symptoms of the Bay's condition than the human systems driving the Bay's decline.[14]

A Framework For Action's abstract, impersonal analysis of the Bay was reflected in the report's recommendations for pollution control strategies. The report emphasized top-down, compliance-driven solutions to environmental problems. Since the report framed the problem in terms of raw numbers of nutrients in the Bay, the report's proposed plans of action focused on tactics designed to reduce the levels of nutrients in the Bay with little regard for the consequences those actions might have on human communities. Among the report's recommendations are stricter limitations on permits for nutrient loading with stronger enforcement of those permits; management plans designed by the EPA with input from the state governments; a ban on the use of phosphates in detergents; and coordination between the USDA and the EPA to develop plans to reduce agricultural non-point source pollution.[15] In none of these cases do the recommendations call for efforts to uncover and attack the root cause of nutrient pollution.

A telling example of *A Framework for Action's* superficial analysis of the nutrient pollution problem is that the report ignores the impact of chicken manure on nutrient pollution. Moreover, while the report mentions that agricultural sources are a leading cause of nutrient pollution in the Bay, the report does not analyze how the chicken industry's need for locally available chicken feed directly affected the region's agricultural output, and consequently, the nutrient discharges of regions like the Delmarva Peninsula in the Bay's watershed. Without an understanding of why farmers were forced to grow more crops and use more fertilizers, (to meet the growing demand from the chicken industry) all the authors of *A Framework For Action* could

[14] Ibid.
[15] Ibid, p. 86-87.

do was to make general recommendations that the EPA work with state governments to determine limits for agricultural nutrient discharge and enforcement protocols.

Ultimately, the abstract and technical nature of *A Framework for Action* led to a set of vague recommendations that focused on generating legislation to reduce nutrient discharge without fully understanding the forces driving nutrient pollution. Shortly after the publication of *A Framework for Action*, Maryland, Virginia, Pennsylvania, D.C., and the EPA signed the *Chesapeake Bay Agreement* (1983). The signatories created the *Agreement* to help implement the recommendations from *A Framework for Action*, but all the two-page document did was to further shift responsibility for the Bay's cleanup to the newly created Chesapeake Executive Council. The Council consisted of appointees by the respective state Governors, the Mayor of D.C., and the Regional Administrator of the EPA. Charged with the duty to "coordinate technical matters and to coordinate the development and evaluation of management plans,"[16] the Council followed the trend of abstract and technical attempts to understand the Bay's problems.[17]

The nutrient control legislation that appeared in the wake of *A Framework for Action* and the creation of the Chesapeake Executive Council further served to isolate environmentalists from the people involved in creating nutrient pollution. However, it was not readily apparent to environmentalists that this approach to solving environmental problems would not work as a general strategy to clean up the Bay because in some cases the top-down legislation effectively reduced nutrient pollution. An example of successful top-down legislation is the phosphate detergent bans of the 1980s. Beginning with Maryland in 1985, then Virginia (1987) and Pennsylvania (1989) the three most critical signatories of the *Bay Agreement* all banned

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[16] *1983 Chesapeake Bay Agreement*, Chesapeake Bay Program, <http://www.chesapeakebay.net/pubs/1983ChesapeakeBayAgreement.pdf>.
[17] Ibid.

phosphate detergents roughly in accordance with the recommendations from *A Framework For Action*.[18] The three states mandated that companies selling detergents in their states must phase out the phosphates in their products and replace them with environmentally friendly substitutes. Although the companies lobbied against these bans, once the Governors signed the bans into law, the companies were able meet the demands of the law and continue doing business without suffering major setbacks. From an ecological standpoint, the bans were a success because the elimination of phosphate from detergents had a positive impact on the Bay by reducing an important source of nutrient pollution. However, the reason why the phosphate bans worked is because the passage and implementation of the laws required no complex understanding of the socio-economic forces involved in the creation of the problem, thus making it an ideal target of top-down, compliance driven legislation. With phosphate detergents, the states could order companies that had ample financial and human resources at their disposal to implement a technological alternative to phosphorus. Environmentalists did not need to understand the intricacies of the chemistry of detergents to be successful; all they needed was enough votes in the legislature to make companies change their business practices.

A similar instance of a successfully implemented top-down tactic is the legislation passed by Maryland and Virginia to regulate stormwater runoff and municipal sewage systems. The creation of the Virginia Water and Sewer Assistance Authority (1984) and Water Facilities Revolving Fund (1986) and Maryland's sewage treatment plant compliance program (1990) helped to curb nutrient pollution from residential sources. Both Virginia and Maryland spent millions of dollars to upgrade and build new stormwater and sewage treatment facilities; much like the case with the phosphate bans, environmentalists needed only the requisite votes in the

[18] *Reflecting on 20 Years of Legislative Achievements*, Chesapeake Bay Commission, Annapolis: Chesapeake Bay Commission, 2003. 24 Oct. 2007, <http://www.chesbay.state.va.us/Publications/prior%20years%20legislation.pdf>.

legislature to create successful legislation. Environmentalists did not need to understand how sewage plants work to create successful legislation, all they required was the political capital to mandate change.[19]

The important similarities between these two cases are that neither one required more than a superficial understanding of the problem, nor did the burden for compliance fall on individuals. The advantage of top-down strategies is that they can quickly and efficiently implement a solution. The catch to top-down strategies is that they do not afford much dialogue between people and government. When the cost of compliance with top-down legislation does not fall on individual people and the problem is straightforward enough, solutions can be readily implemented via legislative fiat. However, when the costs of compliance with a top-down law fall on an individual who lacks the financial resources to comply, the law does not work, the problem does not get fixed, and the individual risks fines or other penalties because they cannot afford to meet the requirements of the law. In addition to failing to solve the ecological problem, top-down legislation can sometimes generate animosity and resentment towards environmentalists and their goals. The history of environmentalism contains many examples of top-down legislation that is unsuccessfully applied to individual people without an understanding of their unique circumstances, subsequently leading to continued environmental degradation.[*]

An illustrative example of the problem with top-down control strategies applied directly to individual people in the Chesapeake Bay is the Nutrient Management Certification Programs

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[19] Ibid.

[*] This phenomenon is by no means limited to Chesapeake Bay environmentalism. The infamous "shoot, shovel, and shut-up" reaction to the Endangered Species Act is a perfect example of compliance-driven legislation leading to resentment and animosity towards environmental goals. Robert Gottlieb's book, *Forcing the Spring* is an excellent treatment of the larger issues facing the environmental movement as a whole, and Gardner M. Brown Jr. and Jason F. Shogren's article "Economics of the Endangered Species Act" is a detailed analysis of the Endangered Species Act's failure to consider underlying economic problems with species protection.

of Maryland (1993) and Virginia (1994).[20] These programs required that all farmers, including chicken growers, obtain state-certified nutrient management plans designed to curb the emissions of nitrogen and phosphorus from their farms by restricting the amount of fertilizer farmers could legally apply to their fields. The program was technically sound; it sent out state-certified "nutrient management consultants" to test the soil conditions of farms to determine the exact nitrogen and phosphorus needs for each farm, and then set appropriate limits for the application of fertilizers. The nutrient management consultants considered factors such as the amount of nutrients available in the soil, the amounts of nutrients in the various types of fertilizers, the projected amount of nutrients needed to achieve desired crop yields and the soil's nutrient retention capacity.[21]

The Nutrient Management Certification Programs are typical of the style of legislation environmentalists employed in the decade after *A Framework for Action* because they operate in a top-down, mandatory fashion that does not account for the unique circumstances and needs of individual people. Much like the phosphate bans and stormwater/sewage programs, the nutrient management plans rely on abstract analyses of raw data, i.e., levels of nitrogen and phosphorus in the soil, fertilizer, etc., and then demand compliance with the amounts of fertilizer they permit farmers to apply on their fields. However, unlike phosphate or stormwater/sewage legislation, the nutrient management plans failed to rein in nutrient pollution. They key difference with the nutrient management legislation is that instead of placing the burden of compliance on a group of people, such as a corporation or community, the responsibility for complying with the law fell

[20] Ibid.
[21] "Nutrient Management Law and Regulations Overview," Maryland Department of Agriculture, 24 March 2008, <http://www.mda.state.md.us/resource_conservation/nutrient_management/nutrient_management_overview.php>.

entirely on individual farmers.[*] Environmentalists' lack of understanding of the specific socio-economic situation of farmers and growers meant that compliance with the law placed a strenuous financial burden on them. For example, the cost of installing curbing around the perimeter of a chicken house to control manure runoff could cost several thousand dollars.[22] Moreover, nutrient management plans often call for multiple structural changes to farms. Thus, the law did not work because the most cost effective alternative for farmers was to blatantly ignore the rules, pay the small fine of $250 (the maximum penalty for repeat offenders is only $2,000), and continue doing business as usual.[23]

The farmers perceived the nutrient management plans as harsh, oppressive policies put into place by a distant government that did not understand the difficulties of their economic situation.[24] When state-certified specialists came to their farms, many farmers felt as if "they were being told what to do by someone who had never worked a day in his life, someone who didn't know the sun and the soil, and most importantly, someone who didn't know their farm."[25] Farmers did not want to be told how to run their farm by someone who had no hands-on experience with it. Moreover, many farmers felt threatened by these plans because they feared that they would hurt their farms' productivity and reduce crop yields. Ultimately, these concerns

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[*] Consider a hypothetical law that would require all people who owned septic systems to immediately pay out of their own pockets for upgrades to their septic systems in order to reduce nutrient pollution. Such a law would be unpopular with homeowners to say the least, and the Nutrient Management Laws were, and in some respects still are similarly unpopular within the agricultural community.

[22] Cestti, Rita, Jitendra Srivastava, and Samira Jung, *Agricultural Non-Point Source Pollution Control*, The World Bank, Washington, DC: World Bank Publications, 2003, 23 Sept. 2007, <http://site.ebrary.com/lib/pitt/Doc?id-10040256&ppg-1>.

[23] Nutrient Management Law and Regulations Overview," Maryland Department of Agriculture, 24 March 2008, <http://www.mda.state.md.us/resource_conservation/nutrient_management/nutrient_management_overview.php>.

[24] Walker, Polly, Telephone interview with author, 6 Feb 2008.

[25] Ibid.

led to a growing sense of animosity between farmers and environmentalists, who they perceived to be the driving factor in the nutrient management legislation.[26]

Although top-down regulation had reduced nutrient pollution from phosphate detergents and sewage facilities, it was ill suited to be the overall strategy for cleaning up the Bay. Agricultural non-point source pollution continued to pollute the Bay and in the dozen or so years after the 1983 *Bay Agreement,* the Chesapeake's dead zone continued to grow larger. The lack of an inclusive social vision to complement their environmental vision damaged the relationship between environmentalists and some groups of people such as the growers, fishermen, and crabbers. The relationship between environmentalists and chicken growers was particularly confrontational; in some rural areas, it was common to see trucks sporting bumper stickers that read "Farmers: The REAL Environmentalists."[27]

[26] Ibid.
[27] Lewis, Jim, Telephone interview with author, 18 Jan 2008.

3.0 THE RISE OF THE VERTICALLY INTEGRTED CHICKEN INDUSTRY

The chicken industry is one of the most important sectors of the economy for some regions of the Bay's watershed, such as the Delmarva Peninsula, where the "Big Four" companies—Tyson, Perdue, Mountaire, and Allen—employ roughly 14,000 people, enough to make "Big Chicken" the 6th largest employer in the state of Delaware.[28] Moreover, these figures do not include the farmers who grow feed for the industry and depend on industry contracts to support their farms. The corporate headquarters of Perdue, Mountaire, and Allen are all in the Delmarva Peninsula, and Tyson, the industry leader, has a substantial presence as well.[29] The industry plays a vital role in certain Bay communities, whose members rely upon work as chicken catchers, growers, feed farmers, or slaughterhouse workers to survive. From an ecological standpoint, the chicken industry is one of the most significant sources of nutrient pollution in the Chesapeake Bay.[30]

Environmentalists had a minimal understanding of how the chicken industry operated, and as a result, their efforts to control nutrient pollution from the industry went awry. The historical development of the chicken business in the Delmarva Peninsula created a system that put the direct source of nutrient pollution, the chicken growers, in an extremely vulnerable

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[28] Bussel, Robert, "Taking on "Big Chicken": the Delmarva Poultry Justice Alliance," *Labor Studies Journal* (Summer 2003) p 4,< http://muse.jhu.edu/login?uri=/journals/labor_studies_journal/v028/28.2bussel.pdf>.
[29] Ibid.
[30] *2007 State of the Bay*, Chesapeake Bay Foundation, Annapolis: Chesapeake Bay Foundation, 2007, 8 Dec 2007, http://www.cbf.org/site/DocServer/2007SOTBReport.pdf?docID=10923>.

economic position. Environmentalists were not aware of the intricacies of the chicken business or the vulnerabilities of chicken growers until after the 1997 *Pfiesteria* crisis. Environmentalists' main method of controlling nutrient pollution from chicken farms, the nutrient management plans, placed the financial burden of cleanup on the individual growers, many of whom were financially incapable of complying with the law due to their position in the chicken industry. The chicken growers' vulnerability and the rising tensions in the mid-1990s between the chicken growers and environmentalists are both traceable to the unique development and nature of the chicken industry in the Delmarva Peninsula.[31]

The chicken industry began almost by accident in Sussex County, Delaware during the 1920s. Cecile Long Steele, generally credited as the "mother" of the chicken industry, ordered 50 laying hens in 1923 after the particularly harsh winter of 1922 had devastated her flock.[32] Mrs. Steele ordered fifty chicks from a local hatchery to replace her lost flock; however, much to Mrs. Steele's surprise, the hatchery accidentally sent her five hundred chicks instead of fifty. Not one to miss a fortuitous break, Mrs. Steele, over the objections of her husband, David Wilmer Steele,[*] decided to try to raise all five hundred by herself, thereby unofficially launching the chicken industry in the Delmarva Peninsula.[33]

Mrs. Steele raised her chicks in a small piano box until, with a bit of help from the reluctant Mr. Steele, she could build a small chicken house for her birds. With a modest investment in corn, she was able to feed, shelter and raise her flock of birds, and in eighteen

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[31] Heller, Michael, Telephone interview with author, 9 July 2008.
[32] Cosenza, Grace, "A Chicken in Every Pot," Diss., University of Delaware, 2006.
[*] Mr. Steele thought that his wife was wasting her time and money in a foolish endeavor by trying to raise chickens; however, he had a good job at the Coast Guard and was willing to let his wife take a chance at raising chickens.
[33] Ibid.

weeks' time, she sold them to a local buyer for a decent profit.** Although the exact numbers are unknown, the profits were more than enough to convince Mr. Steele that there was money in the chicken business. He was so taken by the idea of raising chickens that he quit his job so that he could devote more time to building chicken houses. The next year, the Steeles doubled their production by intentionally ordering a thousand chickens, and by 1926, they had the capacity to raise ten thousand chickens. More importantly, it did not take long for Mrs. Steele's neighbors to catch on to her newfound economic success, and soon chicken houses began to spring up all over Sussex County, Delaware. The industry grew rapidly while remaining decentralized in the early years; by 1930, anyone who wanted to get into the chicken business could order a prefabricated "modern chicken house" out of a Sears-Roebuck catalogue.[34]

Mrs. Steele's success with her first few flocks of chickens radically transformed the economy and livelihoods of farmers in rural Delaware. Mrs. Steele, and those who followed her, transformed the task of raising chickens from a secondary farm activity geared towards producing eggs for family consumption to a major aspect of farm life, with significant amounts of capital and labor going into the production of chickens that they shipped to urban markets throughout the northeast. Over eighty years later, chickens are still an integral part of the region's economy as Sussex County, the birthplace of the chicken industry, continues to lead the nation in chicken production. [35]

The initial growth of the chicken industry brought rewards for farmers in the Delmarva, but it also sowed the seeds for an environmental disaster. Chicken manure and chicken urine contain high levels of nitrogen and phosphorus; in fact, the levels of nitrogen are so high that it is

** As just one sign of how the industry has changed, thanks to modern breeding and feeding techniques, it only takes six to eight weeks to raise chicks to the proper size for harvesting.
[34] Ibid.
[35] Ibid.

unhealthy for workers to breathe the air in chicken coops.[36] Direct contact with manure on skin can cause nitrogen burns. Chicken waste, while high in nitrogen, is even more problematic when it comes to phosphorus. Chickens poorly digest and absorb phosphorus, thus the ratio of nitrogen to phosphorus in chicken manure is heavily unbalanced towards phosphorus. Consequently, when a farmer uses chicken waste as a fertilizer, if the farmer were to apply enough manure to meet his crop's nitrogen requirements, he would risk serious injury or even death to his crops because of the excess phosphorus.[37] As a result of this nutrient imbalance, just enough chicken manure is used to meet the phosphorus demand, with the remainder of the nitrogen coming from artificial chemical fertilizer. The leftover thousands of tons of unused and unnecessary chicken manure wash into the Bay every year, where the high quantities of nutrients fuel the algae blooms that create the Bay's devastating anoxic zones.[38] When Mrs. Steele first began chicken production in 1923, the manure's impact was localized, and apart from perhaps the smell, there was very little serious or permanent impact on the environment. However, the transformation of the chicken industry from a decentralized operation into a highly concentrated vertically integrated business dominated by major integrated poultry corporations had serious consequences for the environment, economy, and society of the Delmarva Peninsula and the Chesapeake Bay.

After growing rapidly in the 1920s, the industry slowed with the onset of the Great Depression. As with the economy in general, the United States' entrance into World War Two proved to be the catalyst for a new era of growth in the chicken industry. When the U.S.

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[36] Morison, Carole, and Walker, Polly, "Organizing for Justice: Delmarva Poultry Justice Alliance," PowerPoint, Johns Hopkins Bloomberg School of Public Health, 2007, <http://ocw.jhsph.edu/courses/nutritionalhealthfoodproductionandenvironment/PDFs/Lecture8.pdf>.
[37] Ibid.
[38] *Manure's Impacts on Rivers, Streams, and the Chesapeake Bay*, Chesapeake Bay Foundation, Annapolis: Chesapeake Bay Foundation, 2004. 1-26, 23 Oct. 2007 <http://www.cbf.org/site/DocServer/0723manurereport_noembargo_.pdf?docID=2143>.

government mobilized the economy for wartime production, the chicken business remained relatively unregulated. With the rationing of beef and pork, the chicken industry expanded to meet new consumer demands. The war also led to greater popularity of chicken meat as it became patriotic to eat chicken so that soldiers fighting in Europe and the Pacific could have pork and beef. By the end of the war, the chicken industry had a much more prominent role in the Delmarva economy.[39]

The chicken industry continued to be relatively decentralized and fragmented until the early 1950s, when the federal government became involved in the business after Hurricane Hazel, a Category 5 storm, devastated the Delmarva Peninsula, damaging and destroying many chicken producing facilities. In the wake of this disaster, the federal government sponsored programs designed to modernize the chicken industry. With the government's assistance, growers built new chicken houses that incorporated the latest design and technologies. The newly built chicken houses were too effective for their own good; growers produced too many chickens, which drove down prices, initiating a decade-long slump in the industry from the 1950s into the 1960s.[40]

Vertical integration of the chicken industry in the Chesapeake Bay began because of this overproduction. The industry's economic woes offered opportunities for integrated firms to take over the business. With cheap chicken glutting the market, many chicken growers went out of business, thereby destabilizing the market for chicken feed. To combat this market instability, the feed mills in the Delmarva Peninsula began to contract feed to chicken growers instead of waiting for them to purchase feed on an as-needed basis. These simple contractual agreements

[39] Cosenza, Grace, "A Chicken in Every Pot," Diss., University of Delaware, 2006.
[40] Ibid.

unleashed the chain of events described below that resulted in the near-monopolization of the chicken industry by a few large integrated firms:[*]

> With successful feed mill operations, the broiler industry began to integrate backwards by acquiring hatchery operations. This action allowed the newly integrated firms to cover the farm production side of the business . . . The newly established integrated poultry firms expanded to the extent that there were fewer and fewer uncommitted broilers in the highly concentrated production areas for the independent processors. Once the forward move towards processing was made, the wholesaling and retailing of the integrator's own brand name products followed. The merger of the production and distribution stages completed the vertical integration of the broiler industry. Through vertical integration the industry was able to reduce costs and gain greater economic control by being able to adjust supply quickly to meet the ever-increasing demand.[41]

Vertical integration gave the chicken industry a capacity for explosive growth that quickly elevated the industry to a position of regional economic dominance. From 1954 to 1964, the chicken production in the region doubled. From 1964 to 1974, it nearly doubled again. Raising hundreds of millions of chickens in such a geographically confined area fundamentally changed the society and ecology of the Bay because it broke the normal nutrient cycles of the region's ecosystem. In 1970, farmers in the Delmarva Peninsula grew only 8.8 million bushels of soybeans. By 1974, when regional chicken production reached 341 million birds, farmers nearly doubled production to 16 million bushels in order to meet the growing demand. At that time, farmers grew an astonishing 93% of the soybeans in the Delmarva Peninsula to feed chickens. There are similar numbers for corn, which farmers use roughly three times more often than soybeans in chicken feed. Of all the corn Delmarva farmers grew in 1974, nearly 80% of it ended up as chicken feed. [42]

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[*] This quotation comes from a technical journal article about the poultry industry, and the author of the passage uses the industry term "broiler" in place of "chicken," but the two words are synonymous.

[41] Ibid, 53.

[42] "DPI Factsheet," Delmarva Poultry Industry Inc., 22 Nov 2007, <http://www.dpichicken.org/index.cfm?content=facts>.

The decade following 1974 was especially crucial for the development of nutrient pollution problems in the Bay, because as the industry continued to increase chicken production, it outstripped the ability of the farmland in the peninsula to raise chicken feed. By 1983, growers fed more soybeans and corn to chickens than farmers grew in the entire Delmarva Peninsula. The environmental ramifications of this industry growth cannot be stressed enough. Before vertical integration and industry expansion, farmers spread chicken manure on their fields as fertilizer. Since Delmarva corn and soybeans fed the chickens, and since the farmers spread their manure on local fields, the nutrient cycle was maintained and no excessive amounts of manure washed off the land into the Bay. Once the industry began growing more birds than the local farmland could support, firms had to import corn and soybeans from outside the region. By the late 1970s, the growth in the business caused chicken populations to exceed the carrying capacity of the land. Chickens produced far more manure than farmers could ever use as fertilizer in the region. As the chicken industry continued to expand into the 1980s and 1990s, this problem only worsened with each passing year, as more and more manure entered the Bay and its tributaries. By grossly exceeding the carrying capacity of the region, the chicken industry disrupted the natural flow of nutrients from plants and animals back into the soil. The excess nutrients, carried by rain and local streams into larger tributaries, eventually wound up in the Bay, creating the unnaturally high nutrient concentrations that furthered the growth of the Bay's anoxic zones. [43]

By the 1990s, environmentalists were well aware of the chicken industry's impact on the Bay, but they did not understand the plight of the chicken growers. Although chicken production doubled, many small farms went out of business as the mass production of chicken drove prices down. Those who remained grew more and more chickens per farm, heightening the impact of

[43] Ibid.

manure concentrations on local waterways. Jim Lewis observed that the rapid growth and vertical integration of the industry left many chicken growers "struggling to make ends meet . . . invisible and marginalized to many in the community, and caught in economic systems over which they have no control and which take advantage of them."[44]

Vertical integration gave the major corporations—Tyson, Perdue, etc.—nearly total control over the chicken industry. The key to their dominance of the industry is that these companies control the production of chickens from start to finish. They own the chickens, the hatcheries, the processing facilities, and they have highly sophisticated mechanisms to market and distribute their product nationwide. The integrated firms only pay the growers to raise the birds. Before vertical integration, chicken growers bought chicks from nearby hatcheries, bought feed from local farms, and then after a few months of food and water the growers took their chickens to a processing plant for sale. The major integrated firms took over and replaced this interdependent system with a system based on dependence and control.[45] Instead of owning and raising their own chickens for sale, the growers are essentially chicken "babysitters" paid to raise the company's birds for six to eight weeks until the company picks the birds up for processing. Since the companies own the chickens and everything else associated with their production, they have the power to offer non-negotiable, take-it-or-leave-it contracts that are extremely disadvantageous to the chicken growers. Under these contracts, the farmer is obligated to spend his or her own money to build chicken houses to company specifications. Furthermore, the farmer must buy all the chicken feed and medication they need to raise the chickens from the company. The growers have little to no leverage because the companies have a near monopoly

[44] Gross, James A., and Lewis, Jim, "Grasshopper Power," *Workers' Rights As Human Rights*, New York: Cornell UP, 2003.
[45] Cosenza, Grace, "A Chicken in Every Pot," Diss., University of Delaware, 2006.

on the various elements of chicken production. There are precious few independent processing plants and virtually all feed-growing farms already have contracts to supply the integrated companies with feed. Since the company owns the birds, feed, and facilities, the chicken growers are only paid to raise the birds while the company reaps the profits from the actual sale of chicken to consumers. The companies can maintain this arrangement because they are able to hire different people, such as chicken catchers and plant workers to capture the chickens, take them away, process, package, and sell them. In economic terms, the companies produce "value added products" like neatly packaged boneless chicken wings, legs, breasts, and thighs, while the growers provide the raw materials; i.e., the whole bird.[46]

This exploitive economic situation forces the growers to invest heavily in infrastructure and labor to raise the chickens, thereby assuming the most risk should their investment fail. Despite the growers' heavy investments, the majority of the profits go to the integrated firms. On average, the company and grower each spend about 50% of the capital in producing a chicken, but because the grower's capital is invested in raising the chicken (raw material) whereas the company invests their capital in processing and marketing (value-adding), the company makes about eleven times more money per bird than the grower.[47] This arrangement puts the chicken growers seriously at risk. Industry contracts stipulate that the grower must build the chicken facilities to company specifications. Many chicken growers incur large debts, sometimes as much as $200,000 to meet the most up-to-date company requirements. In some cases, growers take this risk to try to save struggling farms that have been in their families for generations. They enter the poultry industry with hopes that by sacrificing a few acres for a chicken house or two,

[46]Morison, Carole, and Walker, Polly, "Organizing for Justice: Delmarva Poultry Justice Alliance," PowerPoint, Johns Hopkins Bloomberg School of Public Health, 2007, <http://ocw.jhsph.edu/courses/nutritionalhealthfoodproductionandenvironment/PDFs/Lecture8.pdf>.
[47] Ibid.

they can make ends meet and keep their farm going. Although the investment is large, the return is scant. In bad years, earnings for growers can average as little as $4,000.[48]

By the 1990s, mounting economic pressure led some growers to decide that they needed to organize to obtain better contracts from the companies. Once the chicken growers began to discuss the injustices of the chicken industry, at first informally amongst themselves, but then with greater degrees of organization, they met stiff resistance from the integrated firms. The companies pay their contract growers on a scale based on the live weight of the birds, but the growers are not allowed to be present at the weighing of the birds. Called a "good faith system," the companies hire chicken catchers to take the birds away to a processing plant where they are weighed. This system affords companies numerous opportunities to threaten "troublemaking" chicken growers. A common tactic is to repeatedly push chickens belonging to growers who wished to organize or who were too vocal in their complaints about the company to the "back of the line." By repeatedly delaying the weighing of the birds, the chickens become dehydrated, lowering their live weight and consequently costing the grower money. Other underhanded tactics included giving growers lower quality feed and sick or weak chicks. These tactics have a similar effect: lighter birds at weigh-ins means less money for the grower. Growers who complained about this system or tried to be present at weigh-ins quickly found themselves subjected to these tactics. [49]

Compounding the resistance from the chicken companies to the organization of contract growers was resistance from the growers themselves. Fearful of retaliation from the industry and of losing their farms and their livelihoods, many chicken growers either refused to take part in any organization movement or actively worked against any such organization. The integrated

[48] Ibid.
[49] Walker, Polly. Telephone interview. 6. Feb. 2008

firms facilitated resistance within the chicken growing community by taking the very same tactics used to punish "troublemakers" and turning them around to reward those growers who toed the company line. Higher quality chicks, better feed, shorter lines to weigh in, and preferential bonuses and pay scales all served to impede the progress of the chicken growers who tried to speak out against unjust industry practices.[50] Thus, many chicken growers found themselves in a dangerous economic situation that prevented them from successfully organizing to obtain better contracts. Moreover, hard-pressed growers could not simply afford to walk away from a bad contract after a year or two, because of their larger capital investments.

In addition to these industry-related problems that plagued growers in the early 1990s, environmentalists added another financial burden through their nutrient management legislation. Although the companies own the chickens, the growers are the ones who are legally responsible for the waste, which includes dead birds, feathers, and manure. Furthermore, when designing the pollution control legislation, only the major companies had a voice in the respective state legislatures. Part of what Lewis meant when he said that growers are "invisible and marginalized" is that the growers had no political clout. The industry's ability to keep them disorganized and the growers' own lack of financial resources meant that they had very little access to the decision makers in politics. Without access to the halls of power, growers were left out of the discussion about how to control the nutrient pollution running off from their farms. Consequently, legislation demanding that they change their practices came from the top down without any understanding of the challenges facing growers.[51]

The integrated firms further obscured the issue by arguing that the chicken growers should foot the bill for cleaning up the excess manure. The firms pointed to the fact that many of

[50] Ibid.
[51] Lewis, Jim, Telephone interview with author, 13 May 2008.

the growers owned facilities worth hundreds of thousands of dollars, implying that the growers could readily afford to pay for the cleanup. However, the firms neglected to mention that many of these chicken growers had to go undertake large debts to build chicken facilities that conformed to company standards. The economic and social vulnerabilities of the chicken growers left them unable to speak up on their own behalf; consequently, environmentalists and policy specialists assumed that the growers would be able to afford upgrades to their farms at the cost of only a few thousand dollars. Unaware of the razor-thin profit margins for the average chicken grower, environmentalists and legislators did not include adequate provisions in the law for financial aid to assist the growers in cleaning up their excess manure.[52]

Thus, by the mid-1990s, the burden of the mandates and legislation designed to prevent chicken manure from running off into the Bay fell upon the growers. With little capital to spare, they could hardly afford to comply with nutrient control laws, such as building pits to contain manure or paying to have it shipped off to be used as fertilizer outside of the region. Faced with burdensome regulations, chicken growers learned to resent the environmentalists, who they perceived as "always trying to tell us we were wrong and that what we were doing was bad."[53] Pressured by the poultry firms on one side, as prices for chicken fell steadily throughout the 1990s,[54] and by environmental law on the other side, as the new laws placed the bill for cleanup on those least capable of paying for it, the growers soon found themselves pushed to the edge of bankruptcy. By the mid-1990s, the relationship between these two groups had devolved to the point where "environmentalists and chicken growers were at war."[55]

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[52] Heller, Michael, Telephone interview with author, 9 July 2008.
[53] Walker, Polly, Telephone interview with author. 6 Feb 2008.
[54] Bussel, Robert, "Taking on "Big Chicken": the Delmarva Poultry Justice Alliance," *Labor Studies Journal* (Summer 2003) p 4,< http://muse.jhu.edu/login?uri=/journals/labor_studies_journal/v028/28.2bussel.pdf>.
[55] Lewis, Jim, Telephone interview with author, 13 May 2008.

4.0 *PFIESTERIA* FORCES ACTION

Dubbed "the Cell from Hell," *Pfiesteria piscicida* exploded onto the ecological scene of the Chesapeake Bay by killing tens of thousands of fish, making dozens of people sick and garnering national media attention during the summer of 1997. Although *Pfiesteria* was an ecological and economic disaster for the region, one of the positives that emerged from the crisis was the beginning of a new relationship between environmentalists and chicken growers. *Pfiesteria* emphatically demonstrated that the Bay was still in very poor shape with respect to nutrient pollution, thus convincing many environmentalists to consider new strategies for cleaning up the Bay. Additionally, the media and public opinion backlash to the *Pfiesteria* outbreak placed the blame on the chicken growers. Faced with the reality of their own social and political weaknesses, chicken growers became receptive to organizing into a broader coalition just as environmentalists began to make overtures towards them. While disastrous at the time, the *Pfiesteria* crisis was a turning point for environmentalism in the Chesapeake Bay.[56]

The *Pfiesteria* crisis began in May of 1997, when fish started dying in some of the Chesapeake Bay's tributaries in the Eastern shore of Maryland. What made the *Pfiesteria* crisis much different and much more terrifying than other large-scale fish kills was the manner in which the *Pfiesteria* killed the fish. The dead and dying fish were covered in mysterious red

[56] Heller, Michael, Telephone interview with author, 9 July 2008.

lesions, and some fish were so badly disfigured that they looked as if they had been "doused in battery acid."[57] At first, Bay experts had no idea what was happening. "We were scratching our heads,"[58] comments Rob Magnien, the man put in charge of Maryland's state investigation into the crisis. The initial investigation consisted of an interagency task force made up of experts from the Maryland Department of Natural Resources and the Department of Environment, but according to Magnien, all the task force had was "a bunch of questions, some data, some conflicting opinions," but no answers. [59]

In the Chesapeake, it was not a scientist, but a journalist who first made the connection between *Pfiesteria* and the fish kills. Brad Bell, a reporter for a local TV station, heard about the dead fish with strange red sores in the Eastern Shore, and after airing an initial story, he went back to one affected river with an empty water bottle to get a sample. Bell took his sample and drove to the North Carolina lab of Dr. JoAnn Burkholder. Burkholder is one of the co-discoverers of *Pfiesteria*, which was completely unknown to science until she and a team of researchers discovered the microorganism in 1988. [60] Burkholder confirmed that there was *Pfiesteria* in the water sample, and when Bell aired his groundbreaking report, he unleashed the biggest environmental story in the history of the Chesapeake Bay. Over the next year, the *Washington Post* would publish 130 stories on *Pfiesteria,* drawing national media and political attention on a small segment of the Delmarva Peninsula and the growing link between chicken manure and *Pfiesteria.*[61]

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[57] Fincham, Michael W., "The Frenzy over *Pfiesteria*," *Chesapeake Quarterly* 2007, Maryland Sea Grant, 2 Feb. 2008, <http://www.mdsg.umd.edu/CQ/V06N1/>.
[58] Ibid.
[59] Ibid.
[60] "The Fuss Over Pfiesteria," *CMSE*, 5 June 1998, University of North Carolina,13 May 2008, <http://www.unc.edu/depts/cmse/science/pfiesteria.html>.
[61] Fincham, Michael W., "The Frenzy over *Pfiesteria*," *Chesapeake Quarterly* 2007, Maryland Sea Grant, 2 Feb. 2008, <http://www.mdsg.umd.edu/CQ/V06N1/>.

Scientists knew little about the organism or its life cycle until 1995, when 14 million fish died in a *Pfiesteria* outbreak in North Carolina, prompting a flurry of research about the mysterious creature.[62] Depending upon the stage of its life cycle, *Pfiesteria* is capable of producing its own food via photosynthesis like phytoplankton, or of killing and eating other organisms like carnivorous zooplankton. *Pfiesteria* may have up to 24 different stages in its life cycle; during four of these stages, the microorganism is capable of producing powerful neurotoxins to stun and kill fish so that the organism can feed upon them.[63] There is a strong correlation between outbreaks of *Pfiesteria* and chicken farms near the water. Although there is a debate over the strength of the causal link between chicken manure runoff and *Pfiesteria* outbreaks, one theory holds that the runoff of chicken manure, because it is produced from an animal (as opposed to artificial fertilizer) induces *Pfiesteria* to switch from an algae-consuming, photosynthetic lifestyle to a carnivorous, toxic stage.[64] *Pfiesteria's* role in the ecosystem is to regulate fish populations; when too many fish are in a small body of water, their excrement can have the same negative impact on water quality as any other type of nutrient pollution. The biological solution to this problem is *Pfiesteria*. When nutrient levels get concentrated enough in a small area, *Pfiesteria* changes life cycles to a carnivorous form that uses its powerful toxins to hunt. Much as grasshoppers will turn into locusts under a specific set of circumstances, the runoff of chicken manure was so great in certain tributaries that it induced *Pfiesteria* to enter a toxic stage of its lifecycle and kill fish by the thousands.[65]

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[62] Cohen, Adam, "Massacre on the Bay," *CNN*, 29 Sept 1997, Time Magazine, 13 May 2008, <http://www.cnn.com/ALLPOLITICS/1997/09/22/time/environment.html>.
[63] Ibid.
[64] "1997 Pfiesteria Outbreak," *WHOI*, 1998, Woods Hole Oceanographic Institute, 23 Mar 2008, <http://www.whoi.edu/redtide/notedevents/MDfish/1997articles.html>.
[65] Ibid

The fish kills by themselves made *Pfiesteria* a major environmental problem, but the outbreak became a national news story when panic and fear erupted as *Pfiesteria* began to affect *people*. Known as "*Pfiesteria*-Associated Syndrome," people who are exposed to *Pfiesteria* toxins develop respiratory problems, eye irritation, skin rashes, gastroenteritis, and neurocognitive problems such as dizziness, confusion, and loss of memory.[66] When watermen and state workers in *Pfiesteria*-infested zones began to develop these symptoms, the *Pfiesteria* outbreak became a staple of front-page news. By midsummer, President Clinton, Vice President Gore, and a host of local officials had all visited the Eastern Shore to look tough on chicken farmers by calling for stricter regulations on manure runoff.[67]

By the late summer of 1997, the *Pfiesteria* crisis created the context for a new round of environmental laws. People were afraid to go in the water, they were afraid to eat seafood from the Bay, and they were willing to listen to what environmentalists had to say. According to Michael Heller,[*] a former member of the Board of Directors for the Chesapeake Bay Foundation:

> *Pfiesteria* provided an opportunity for us. It gave us political capital and willpower that we had never had before, it validated our warnings about the health of the Bay, and it gave us a level of influence to do things we'd never been able to do before. It took *Pfiesteria* to really scare people into listening to what we had to say about the Bay.[68]

Although the CBF was in a strong position to advocate for more top-down, punitive laws, it did not. Instead, within months of the peak of the *Pfiesteria* crisis, the CBF formed a tentative

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[66] Morris Jr., J. Glenn, "Pfiesteria Hysteria," *Pfiesteria, ''the Cell From Hell,'' and Other Toxic Algal Nightmares*, University of Chicago, 14 May 2008 <http://www.journals.uchicago.edu/doi/pdf/10.1086/514799>.
[67] Buck, Eugene H., Claudia Copeland, Jeffery A. Zinn, and Donna U. Vogt, *Pfiesteria and Related Harmful Blooms*, Congressional Research Service, 1997, 14 May 2008, <http://www.cnie.org/NLE/CRSreports/marine/mar-23.cfm>.
[*] Heller is currently the manager of Clagett Farm, the CBF's model of sustainable, environmentally friendly farming. For more information, see the Clagett Farm website at http://www.clagettfarm.org/.
[68] Heller, Michael, Telephone interview with author, 9 July 2008.

coalition with a group of chicken growers to come up with a different strategy for cleaning up the Bay.

Before the *Pfiesteria* crisis made headlines, the CBF was already reconsidering their position with respect to chicken growers. The CBF had "no strategies for incorporating chicken farmers into the discussion about the Bay"[69] at this time, but Heller and others within the CBF saw a need to work with the chicken growers. *Pfiesteria* dramatically reinforced the position of people like Heller, because the outbreak proved that the previous attempts to reduce nutrient pollution from chicken manure had not worked. Environmental policy guiding Bay cleanup since 1983 relied heavily on scientific and technical assessments of the Bay's health; the *Pfiesteria* epidemic painfully demonstrated that at best these assessments painted an incomplete picture of the overall state of the Bay. Moreover, the crisis proved that a decade and a half after the first *Chesapeake Bay Agreement*, the Bay's health was still in serious jeopardy from nutrient pollution. Faced with these new realities, environmentalists were willing to explore innovative approaches towards reducing nutrient pollution from chicken manure.[70] The *Pfiesteria* crisis provided the motive and opportunity for environmentalists to reach out to chicken growers, what they lacked was the means to do so. However, the means to build a new relationship with chicken growers came from a somewhat unlikely source: Jim Lewis, an Episcopal priest working on labor issues within the poultry industry.

The Episcopal church of Delaware invited Lewis to the Delmarva Peninsula in 1995 to work on social issues with poultry processing plant workers, but he quickly saw the much broader problems the chicken industry caused for both the environment and society. Lewis is not a stereotypical man of faith; he studied philosophy in college, and he served the United States as

[69] Ibid.
[70] Ibid.

an infantry officer with the Marines during the Vietnam War. After his service in Vietnam, Lewis returned home with a commitment to pacifism and a desire to help the less fortunate. Lewis has been actively involved in a variety of social issues over the past 40 years, and a large part of his success comes from his outgoing personality and willingness to listen to peoples' stories. Although he is best known for his work with the chicken industry in the Delmarva Peninsula,[*] Lewis has helped organize people to fight for issues such as healthcare for women and children, AIDS, criminal justice, and equal rights for women and minorities. Lewis believes that the success of any grassroots movement depends on the ability of leaders to connect with a wide range of people on the ground, which is why he set up a daily routine of waking up at sunrise and walking around town when he first arrived in the Delmarva Peninsula.[71]

Lewis' morning walks around town gave him a chance to meet members from throughout the entire community, and more importantly, to listen to what they had to say. Gregarious and amicable, Lewis soon connected with people and gained their trust. Lewis learned about the various aspects of what he calls "Big Chicken." He draws an extended metaphor between Big Chicken and a house; Lewis says that there are many "rooms" to the house, there are rooms of processing plant workers, chicken growers, environmentalists, and consumers, and all of them are connected with one another via Big Chicken. Lewis was hit with what he calls a "psychedelic explosion" when he saw the "harsh reality that Big Chicken owns and controls every room in that house and that all the rooms are connected."[72] Lewis understood that no lone group could be successful in working against Big Chicken. Therefore, his immediate goal was to build an awareness that "each part [of the community] must be concerned for all the others" and to foster

[*] Mike Wallace interviewed Lewis for a 1999 *Sixty Minutes* piece on Lewis' activism in the Delmarva Peninsula.
[71] Lewis, Jim. Telephone interview with author, 18 Jan 2008.
[72] Gross, James A., and Lewis, Jim, "Grasshopper Power," *Workers' Rights As Human Rights*, New York: Cornell UP, 2003.

a belief that "if there's not a place for all of us, there's not a place for any of us."[73] From this core idea that everyone in the community had to look out for everyone else, Lewis hoped to build an alliance that would be able "to stand up against the political and economic might of Big Chicken."[74]

Lewis' strategy for creating a sense of communal awareness was simple, yet difficult to execute. Lewis wanted everyone touched by Big Chicken to sit down together and talk about how the industry affected them, but Lewis quickly realized the difficulty of this task; decades of racial and social divisions had left the community fractured and divided. Lewis called organizing the disparate elements of the chicken community "the biggest challenge of my life."[75] Although he started working on building an organization in 1995, it took two years for Lewis, with the help of Carole Morison, an Eastern Shore chicken grower, to form the Delmarva Poultry Justice Alliance (DPJA).[*,76]

Once formed, Lewis led the DPJA in a series of small, but locally publicized protests against Big Chicken. These protests caught the attention of Michael Heller, who on a hunch decided to give Lewis a call and see if he might be the man to put the CBF in touch with the chicken growers.[77] Lewis recalls that:

> Michael called me up, and wanted to know what my work with the DPJA was all about. Apparently, some of their people in Baltimore had caught wind of my activities organizing the group through some media sources and through word-of-mouth with

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[73] Bussel, Robert, "Taking on "Big Chicken": the Delmarva Poultry Justice Alliance," *Labor Studies Journal*, (Summer 2003) p 4, < http://muse.jhu.edu/login?uri=/journals/labor_studies_journal/v028/28.2bussel.pdf>.
[74] Lewis, Jim. Telephone interview with author, 18 Jan 2008.
[75] Lewis, Jim, Telephone interview with author, 13 May 2008.
[*] Although they would go on to form a close relationship in the DPJA, Morison initially refused to meet Lewis in 1995. The poultry industry worked very effectively to isolate the various components of their vertically integrated business and to foster distrust between the groups. Chicken growers, poultry processing plant workers, and chicken catchers did not trust each other, and it took some time before Lewis was able to convince these groups to meet with one another and eventually form the DPJA.
[76] Ibid.
[77] Heller, Michael, Telephone interview with author, 9 July 2008.

> contacts on the Eastern Shore, and they wanted to talk to me. Well, I was real excited, and I invited them to come to one of our meetings, and I encouraged them to send some people over to talk with us and hear our stories.[78]

Heller responded positively to Lewis and began to send representatives from the CBF to the DPJA's meetings. With the *Pfiesteria* crisis setting the context for these meetings, environmentalists from the CBF and chicken growers with the DPJA began to communicate effectively with each other. *Pfiesteria* validated environmentalists' claims that the health of the Bay was in jeopardy. While many growers dismissed earlier claims about the deteriorating health of the Bay as "alarmist," the sight of dead and dying fish with mysterious red sores floating around their own waters was incontrovertible evidence that the Bay was in trouble.[79] Moreover, local and national media sources placed the blame on the growers. Just as *Pfiesteria* exposed the environmentalists' need for a new approach to cleaning up the Bay, *Pfiesteria* exposed the chicken growers' political weaknesses. Lewis likens the interactions between environmentalists and chicken growers to "a truly 'Pentecostal' event where people speak different languages with different understandings and orientations and yet find a common ground to unite."[80]

When Michael Heller first contacted Jim Lewis, he and other environmentalists in the CBF did not understand the chicken growers' precarious economic position. As Heller talked to Lewis and heard firsthand stories about how difficult it is for chicken growers to make a living, he recognized a flaw in the CBF's approach towards protecting the Bay. Heller admits that the CBF's "focus as an organization had been purely environmental. [It was] not focused in or aware of other social issues that much."[81] Sue Brown, another CBF worker, learned how the chicken

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[78] Lewis, Jim. Telephone Interview. 13 May 2008.
[79] Walker, Polly, Telephone interview with author, 6 Feb 2008.
[80] Gross, James A., and Lewis, Jim, "Grasshopper Power," *Workers' Rights As Human Rights*, New York: Cornell UP, 2003, p. 533.
[81] Ibid.

industry operated from the inside, and she described her experience as gaining a new appreciation for the challenges chicken growers and other workers within the industry had to overcome on a daily basis.[82] After talking to Lewis and attending DPJA meetings, Heller realized that in order for the CBF to be a leader in environmental advocacy, the organization would need to take a broader view of "environmental" issues. The chicken growers' social and economic plight had a direct influence on their negative environmental impacts, and Heller saw that the only way to effectively limit nutrient pollution coming from chicken farms would be to help put the growers in a stronger social, economic, and political position. To this end, he convinced the CBF's Board of Directors to team up with the DPJA.[83]

The first step for Heller and the CBF was to continue and formalize the information exchange process begun at the DPJA meetings. Through Lewis, Heller contacted Carole Morison, a chicken grower and another of the co-founders of the DPJA. Morison and Heller quickly built a rapport as they worked to design educational programs that taught growers about the state of the Bay and environmentalists about the nature of the chicken industry.[84] Lewis recalls that these initial educational programs were "essential to helping everybody understand each other. The CBF became very much aware of the problems the growers had, and they learned that growers and catchers and plant workers wanted a clean Bay, but they were afraid to lose their jobs."[85] Nevertheless, the chicken growers were still wary of the CBF. While some

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[82] Bussel, Robert, "Taking on "Big Chicken": the Delmarva Poultry Justice Alliance," *Labor Studies Journal*, (Summer 2003) p 4, < http://muse.jhu.edu/login?uri=/journals/labor_studies_journal/v028/28.2bussel.pdf>.
[83] Heller, Michael, Telephone interview with author, 9 July 2008.
[84] Ibid.
[85] Lewis, Jim Telephone interview with author, 13 May 2008.

individuals, such as Morison, realized that they needed the CBF's assistance, others distrusted the environmentalists and thought they were "the devil."[86]

Throughout the early meetings between environmentalists with the CBF and chicken growers with the DPJA the *Pfiesteria* crisis shaped and stressed their relationship. Not all chicken growers drew the distinction between the CBF in particular and the news media at large, which was castigating the growers for their role in the *Pfiesteria* outbreak.[87] The chicken growers' reaction to the CBF and the *Pfiesteria* crisis divided communities. Angry growers posted signs telling the CBF to "Get Out,"—in decidedly less polite terms—only to find out a few nights later than some pro-CBF sympathizers had torn the signs down.[88] A main reason for the animosity towards the CBF was threats and pressures that poultry companies—Tyson and Perdue in particular—placed on their contract growers. The companies, in addition to the tactics mentioned earlier, threatened to remove their operations from the Delmarva Peninsula if the DPJA and CBF did not cease their efforts to publicize the injustices of the poultry industry.[89]

The flashpoint between the integrated chicken firms and the DPJA and CBF was the struggle over who was ultimately responsible for the *Pfiesteria* disaster. Initially, Maryland's state legislature and the federal government considered plans to regulate how much manure chicken growers could spread on their fields;[90] these early plans were typical of the top-down style of environmental policy in the Bay region. The state of Maryland and the U.S. government spent a combined $9 million researching legislative solutions to the *Pfiesteria* outbreak;

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[86] Walker, Polly, Telephone interview with author. 6 Feb 2008
[87] Ibid.
[88] Francis, Clines X. "Progress in Cleaning Chesapeake Bay, But Far to Go." *The New York Times* 22 July 2001, Late (East Coast) ed., sec. 1. ProQuest. University of Pittsburgh University Library System, Pittsburgh. 19 Dec. 2007.
[89] Lewis, Jim Telephone interview with author, 13 May 2008.
[90] Babington, Charles, and Shields, Todd, "Md. Poultry Farmers May Feel Heat in War on Pfiesteria," *The Washington Post*, September 12, 1997: A1-A3.

however, the initial attempts to suggest solutions to the *Pfiesteria* problem did not break from the mold of the *Framework for Action* report or the 1983 *Chesapeake Bay Agreement.* Maryland's initial recommendation, that the chicken growers comply with tough new laws limiting how much manure they could spread on their fields, did not look beyond the symptoms of the problem. Moreover, like the Nutrient Management Certification Program, Maryland's proposal infuriated growers. Morison said, "The whole idea of regulating the farmers makes me sick to my stomach . . . we don't own the chickens and we don't own the feed they eat . . . the poultry companies take no responsibility for this manure. Why are we responsible for the industry's waste?"[91]

The new relationship and information exchange between the DPJA and the Chesapeake Bay Foundation prompted the CBF to devise an alternate proposal. The CBF led a coalition of other regional environmental groups in suggesting a plan that would charge the poultry companies a fee of a penny per pound of chicken in production, with the money going into a fund to pay for the removal of excess chicken manure.[92] As part of their lobbying efforts, the DPJA and CBF arranged a trip for 22 members of Maryland's state legislature so that lawmakers could see firsthand how difficult it is for growers to rid themselves of their excess manure. Lawmakers talked to chicken growers firsthand, and many of them were shocked at the terms and conditions of chicken industry contracts, which as mentioned, do not give the growers any control over what the chickens eat and leave the growers stuck with piles of manure. [93] The combined efforts of the DPJA and CBF finally gave the "invisible and marginalized" growers some political presence.

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[91] Ibid.
[92] "Environmentalists Want Poultry Producers to Pay," *The Washington Post*, 18 Dec. 1997: D3.
[93] Shields, Todd, "A Lesson in the Economics of Poultry; MD Lawmakers Learn of Relationship Between Farmers, Companies," *The Washington Post*, October 22, 1997: B5.

When the chicken companies realized that the DPJA was gaining political clout, they moved quickly to try to shut the organization down. Tyson led the most intense attack on the DPJA; they sued the organization in an attempt to obtain the records of its members. Part of the DPJA's organizational cohesiveness rested on the anonymity of its members; Tyson's lawsuit terrified many growers because they feared that if companies found out about their membership in the DPJA they would never get a contract again, and consequently lose their farms to bankruptcy. According to Lewis, "If Tyson had won that lawsuit, they would have killed us."[94] Although the DPJA won the right to keep its membership information private, the legal battle weakened the organization to the point where it was nearly out of funding. Faced with the possibility of shutting down the organization due to lack of money, Carol Morison called up Michael Heller to see if the CBF could help the DPJA. In one of the most crucial moments of the fledgling relationship between the CBF and DPJA, Heller helped Morison find and apply for grants to keep the organization running. Heller recalls that helping the DPJA had become more than just an environmental and social issue. He felt that the chicken industry treated its workers unjustly, and that helping the DPJA became as much of a moral issue as an environmental issue for him. Together, Morison and Heller put together enough non-profit grant applications to keep the DPJA operational. Moreover, Heller proved that the CBF was truly committed to helping the DPJA's cause, and in a move that unofficially cemented the CBF-DPJA alliance, Morison invited Heller to serve on the Board of Directors for the DPJA.[95]

With their new awareness of the problems facing the chicken growers, the CBF lobbied for nutrient control legislation designed to help growers and place more legal responsibility for manure disposal on the companies. In early 1998, Maryland's state legislature began to pass laws

[94] Lewis, Jim Telephone interview with author, 13 May 2008.
[95] Heller, Michael, Telephone interview with author, 9 July 2008.

in response to the *Pfiesteria* crisis of the previous summer.[96] This legislation was significantly different from previous attempts to control nutrient pollution from chicken farms. Two important features stand out in contrast with earlier nutrient management legislation: an understanding of the need to help the growers get rid of their excess manure and an understanding of the necessity of making the chicken corporations more responsible for their birds' manure. With respect to the need to help growers get rid of their excess manure, Maryland's legislature passed a law that created a program to haul excess manure away from chicken farms to cropland in the state that could safely absorb the nutrients. Financed by the taxpayers and not the growers, this program helped them dispose of manure in a cooperative, instead of a coercive fashion. Designed in response to lobbying efforts from the CBF and DPJA that called for measures to help the growers, this legislation signifies an understanding of the economic difficulties of the chicken growers, and an awareness to design the necessary legal mechanisms that will actually work to reduce nutrient pollution.[97]

Another 1998 law required that the chicken companies change the composition of their feed to include an enzyme called phytase. Phytase was already mandatory in many European countries at the time, and Maryland became one of the first US states to require that companies include this enzyme in their feed. Phytase helps chickens metabolize phosphorus more efficiently, which reduces the phosphorus in the manure. Studies at Virginia Tech demonstrated that phytase could achieve a 35-40% reduction in the amount of phosphorus in manure, but poultry companies had been reluctant to change their business practices.[98] This law in particular

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[96] "Actions of Maryland's General Assembly," *The Washington Post*,23 April, 1998: M6.
[97] *Reflecting on 20 Years of Legislative Achievements*, Chesapeake Bay Commission, Annapolis: Chesapeake Bay Commission, 2003. 24 Oct. 2007, <http://www.chesbay.state.va.us/Publications/prior%20years%20legislation.pdf>.
[98] Staff And Wire Reports, "VA Poultry Industry to Increase Use of Phytase," *The Bay Journal*, Dec. 2007, 22 Dec. 2007 <http://www.bayjournal.com/article.cfm?article=3218>.

highlights the differences in the nutrient reduction strategy after 1997. Although phytase is a technical solution, the proposal to use phytase was the result of significant on-the-ground consultation with chicken growers, and not a result of an abstract analysis of the problem. Once environmentalists and legislators realized that the chicken growers had no control over what they fed the company birds, they could design laws to fix the problem and place the responsibility for changing the composition of the feed on the companies, which have the resources and power to make the necessary changes.[99]

Without the detailed information exchange between the CBF and DPJA in response to the *Pfiesteria* crisis, the new strategy of nutrient pollution control may not have evolved for many more years, if ever. The legislation promulgated in 1998 marked the start of a new era in Chesapeake Bay environmentalism. Led by the CBF, environmentalists cooperated with the growers to ensure that they got the assistance they needed and that the chicken companies would start shouldering their part of the manure cleanup burden. This marked a shift for the CBF, which realized that it could no longer strictly use top-down control strategies. By cooperating with and learning from the chicken growers, the CBF developed new strategies for pollution control that enabled the organization to build a mutually beneficial relationship with the chicken growers. Together, the CBF and chicken growers developed a working relationship that enabled them to strengthen the grower's social and economic position while at the same time reducing nutrient pollution from their farms.

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[99] *Reflecting on 20 Years of Legislative Achievements*, Chesapeake Bay Commission, Annapolis: Chesapeake Bay Commission, 2003. 24 Oct. 2007, <http://www.chesbay.state.va.us/Publications/prior%20years%20legislation.pdf>.

5.0 STRENGTHENING THE ALLIANCE

The goodwill the initial successes of the CBF-DPJA coalition fostered among the environmentalists and chicken growers was severely tested during 1999 and 2000, but the open dialogue between the two organizations ultimately enabled the two sides to continue to develop their relationship and craft environmental policy that took into consideration both the needs of the growers and the needs of the Bay. The source of tension between the environmentalists and growers was that the "growers" are not as homogenous as the CBF initially perceived them to be. When the CBF proposed legislation in 1999 that they thought would assist growers in removing the manure from their farms, many growers reacted negatively to the organization's proposal. The Bay Foundation genuinely thought that they had a plan that would appeal to the growers, but the vehement resistance from some growers took them aback. Mutual confusion nearly tore the nascent coalition apart, but the dialogue begun by Heller, Lewis, and Morison enabled the two sides to come together, discuss their problems, and ultimately strengthen their relationship.

By 1999, the CBF was well aware that the most significant obstacle hindering nutrient control efforts with chicken growers was the fact that the growers were still legally responsible for the manure. Thus, the Bay Foundation sought a way to design legislation that would make the manure the responsibility of the big corporate processors. Once the companies owned the manure, they could make the Tysons and Perdues as legally responsible for their "industrial waste" as any other big corporation. The CBF thought they had finally devised a legal

mechanism—known as "co-permitting"—that would force the corporate processors to take ownership of the manure. The goal of co-permitting was to link state-issued wastewater discharge permits for the corporate processing facilities to the manure on farms by making the nutrients running off the company's growers' fields count as part of the wastewater discharge of the processing facilities. Thus, while the manure was still technically the grower's property, the permits would force the companies to clean up the manure, or else the manure runoff would cause the processors to violate their permits, which carries penalties of up to $27,500 per day per violation.[100]

Heller thought that the CBF had finally found a solution to the manure problem via co-permitting; he and the organization were caught off-guard when their proposal was met with anger from the growers. Heller explains that:

> We thought we had a legal tool to force Perdue to agree to take responsibility for the manure, but the farming community hated this. We didn't realize how deep and complex the relationships in the farming community are. Grain farmers love Tyson and Perdue because they buy all their crops and the growers were divided on the issue because they were afraid of losing their contracts.[101]

The situation facing the agricultural community was far more complex than Heller or the CBF initially realized. Even amongst the DPJA, many growers hated the co-permitting plan. Jim Lewis recalls that growers told him that they felt like "the companies are the 'devil,' but they're the only devil we've got."[102] In other words, while the growers wanted to get better contracts from the companies, they also depended on those they had to remain fiscally solvent from one year to the next. The growers saw the co-permitting plan as a direct threat to their livelihoods

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[100] Satterfield, Bill, "Co-Permitting Fight Continues," *Welcome to DPI, Your Poultry Information Source*, Aug. 2001, Delmarva Poultry Industry, Inc., 15 July 2008, <http://www.dpichicken.com/index.cfm?content=news&subcontent=details&id=73>.
[101] Heller, Michael, Telephone interview with author, 9 July 2008.
[102] Lewis, Jim Telephone interview with author, 13 May 2008.

because they feared that companies would simply stop giving contracts to growers who could not dispose of the manure on their own.[103]

The crucial factor the CBF was not aware of was the division within the chicken growing community between large-sized farms and small-sized farms. Chicken houses take up very little space compared to most other farm operations; in some cases large farms of hundreds of acres have a chicken house or two, and these farms can effectively use all of their manure as fertilizer on their fields. For them, the co-permitting plan would not be a problem, they used all their manure on their fields and they would not be an additional nutrient discharge burden to the companies' wastewater permits. On the other hand, there are very small farms, of just a few to a few dozen acres that can have 3-5 chicken houses producing far more manure than they could ever use on such a small area. These farms would add a significant amount of waste to the "discharge" on the companies' permits, and the fear among growers with small farms was that the companies would no longer give them contracts. These growers felt especially threatened by the co-permitting plan, and the resulting dissention between them and environmentalists threatened to destroy their fragile coalition.[104]

Heller describes this as "the time of greatest division" between growers and environmentalists.[105] By this point, the trust and cooperative spirit that developed during the *Pfiesteria* crisis was nearly gone. Compounding the resistance from many growers and the processors was strong opposition from corn and soybean farmers. These farmers depended on Perdue and Tyson in a much different way than the growers; although technically speaking they were independent from the system, for all practical purposes their very existence depended as

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[103] Heller, Michael, Telephone interview with author, 9 July 2008.
[104] Ibid.
[105] Ibid.

much on the chicken industry as did that of the growers. The companies' threats of leaving the Delmarva scared corn and soybean farmers because if the chicken industry left, no one would buy their crops. Consequently, these farmers adamantly opposed any measures they thought would jeopardize the chicken industry in the region.

By 2000, the peace and cooperation between chicken growers and the CBF verged on open hostility and conflict once again. Realizing the need to repair their relationship with the chicken growers Heller and the CBF arranged for a special meeting with the growers. The CBF invited them to Port Isabelle, a small island owned by the Bay Foundation. Port Isabelle is normally used as an educational and research outpost, but in the spring of 2000, it became the setting for one of the most crucial meetings in the environmental history of the Chesapeake Bay. Heller recalls the mood as "edgy" and "tense" as the two sides expressed their mutual displeasure with the situation. The CBF, in addition to the growers, also invited some watermen—fishermen, crabbers, oyster harvesters—to testify on the organization's behalf. The watermen explained how they had once distrusted the CBF as well, but they realized that they needed help to protect their livelihoods. The testimony of the watermen eased the tension at Port Isabelle, and much like the early DPJA meetings in 1997, the two sides expressed themselves and found common ground to cooperate. In the end, the meeting was a success. Heller recalls one woman coming up to him to say, "I really thought you were out to get us, but now I see you care about the same things I care about."[106] The environmentalists learned more about the complexity within the chicken growing community, and more importantly, the growers regained some trust in the environmentalists.[107]

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[106] Ibid.
[107] Ibid.

As a result of the Port Isabelle meeting, the CBF decided to drop the co-permitting plan. In a sharp contrast to the environmental strategies of the 1980s and early 1990s, the CBF listened to what the growers had to say, and adjusted their strategy accordingly. Learning of the trouble the co-permitting plan might cause for small-farm chicken growers enabled the CBF to take legislation off the table that, if passed, most likely would have been a counterproductive failure. Instead of forging ahead with their co-permitting plan, the CBF once again began to work closely with the DPJA to rebuild their relationship with the growers and develop a new plan to combat nutrient pollution.

Dubbed "Bay Friendly Chicken," the CBF's new plan of action was to work with the DPJA to research and potentially develop an alternative to the current system monopolized by the giant chicken corporations that would be more environmentally and grower friendly. The premise behind "Bay Friendly Chicken" was simple: create an alternative means of producing chicken to the intensive vertically integrated system that would be healthier for the Bay, and more economically equitable for those involved in the production of chicken. The Chesapeake Bay Foundation and the DPJA worked closely together to research and develop this model, and in the words of Jim Lewis, "The Bay Foundation absolutely did the best it could to help us out."[108] In the wake of the co-permitting tussle, the CBF worked vigorously to repair its strained relationship with the growers.

From an environmental standpoint, "Bay Friendly Chicken" would be raised organically, without antibiotics or artificial growth hormones. The chickens would be fed certified organic grain, a move that would reduce both the amount of pesticides entering the Bay and make the chicken healthier to eat. Traditional chicken houses can average anywhere from ten to thirty

[108] Lewis, Jim. Telephone Interview. 13 May 2008.

thousand birds with about one square foot of space per bird, which necessitates heavy amounts of antibiotics to prevent disease from wiping out an entire flock.[109] "Bay Friendly Chicken" would be raised with more space per bird, with some chickens grown free range, thus enabling growers to raise birds without using antibiotics.[110] Furthermore, the birds would be allowed more time to mature, thereby obviating the need to give the birds growth hormones. With respect to nutrient pollution, the farms on which these birds were to be grown would incorporate the most up-to-date nutrient pollution best management practices (BMPs) so that the impact of the chicken manure on the Bay would be lessened.

As regards the social and economic aspects of raising the chickens, "Bay Friendly Chicken" would operate independently from the major integrated firms. The growers would own their own birds, buy their own feed, build their own houses and sell their birds directly to processing plants. This would free the growers from the industry's contracts and the stipulations to build every chicken house according to company specifications and to buy the feed and medicine for the birds from the company.[111] Despite the promise this project showed, the Bay Foundation and DPJA were ultimately unable to implement the "Bay Friendly Chicken" program because the independent infrastructure and market they would need to raise and sell "Bay Friendly Chicken" did not exist. The vertically integrated poultry firms owned all the hatcheries, contracted all the grain and feed, and owned all of the processing plants. Without any independent hatcheries, processing plants, or uncontracted feed mills, there was no chance "Bay Friendly Chicken" could get off the ground. Nevertheless, the program did succeed in rebuilding

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[109] Cosenza, Grace. "A Chicken in Every Pot." Diss. University of Delaware, 2006.
[110] Morison, Carole, and Walker, Polly, "Organizing for Justice: Delmarva Poultry Justice Alliance," PowerPoint, Johns Hopkins Bloomberg School of Public Health, 2007, <http://ocw.jhsph.edu/courses/nutritionalhealthfoodproductionandenvironment/PDFs/Lecture8.pdf>.
[111] Ibid.

the cooperative partnership between the CBF and chicken growers, which set the stage for the next round of nutrient management legislation.[112]

After "Bay Friendly Chicken," the CBF's next approach to reducing nutrient pollution was to get money for conservation practices for growers. Due to their cooperative relationship with the chicken growers, the CBF was able to lobby for legislation that took into consideration the importance of providing growers with the financial and technical assistance they needed to reduce the impact of the manure running off their farms. The Maryland Agricultural Water Quality Cost-Share (MACS) program and Virginia's Agricultural BMP Cost-Share Program were the legislative responses designed to help growers comply with nutrient management law. These laws are distinctly different from the pre-1997 style of top-down legislation, because instead of setting mandates and demanding compliance, Maryland and Virginia's programs are voluntary programs available to any grower who wants help reducing nutrient pollution from their farms. Critical to the success of these laws is the fact that both Maryland and Virginia provide substantial financial aid to help growers implement "Best Management Practices" (BMPs).[113]

BMPs are a system of integrated structural changes and land use practices designed to improve water quality by reducing runoff of nutrients from agricultural fields. When properly implemented, BMPs are beneficial for both growers and the environment. BMPs can control erosion and help maintain soil quality while at the same time reducing the flow of nutrients from croplands. For example, one of the more popular BMPs in the Bay's watershed is "Grassed Waterways." These are man-made channels that are shaped and graded to control runoff from a

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[112] Ibid.
[113] Cestti, Rita, Jitendra Srivastava, and Samira Jung, *Agricultural Non-Point Source Pollution Control*, The World Bank, Washington, DC: World Bank Publications, 2003, 23 Sept. 2007, <http://site.ebrary.com/lib/pitt/Doc?id-10040256&ppg-1>.

farm field. The environmental advantages of a grassed waterway are that it slows runoff and gives fast-growing grasses in the channel time to filter out excess nutrients, thus improving water quality. For the farmer, these channels reduce erosion because they control and slow the runoff from the farm that would otherwise cut deep gashes in the fields. At a cost of only $.50 per square meter, grassed waterways are a simple, cheap, and effective way to reduce the impact of manure runoff.[114]

The catch is that not every individual BMP is as cheap as Grassed Waterways, and oftentimes a farmer will achieve best results by combining several BMPs together. Like many investments, the farmer who implements BMPs may not see immediate returns, but it is not unusual for some farmers to try to implement BMPs in good years in anticipation of their benefits down the road. However, the chicken growers simply cannot afford to implement even the cheapest BMPs in good years, much less an integrated system that is most effective at reducing nutrient pollution from their farms. The success of MACS and Virginia's program rests on the understanding that chicken growers want to improve their farms, but lack the resources to do so. The MACS Program provides support for up to 87.5% of the cost to install BMPs that will help reduce nutrient pollution and Virginia's BMP Program provides support for 75% of the cost to purchase and/or install BMPs that will reduce nutrient pollution.[115] Maryland and Virginia's BMP cost-share programs have been so successful that the World Bank commissioned a study of BMPs in the Chesapeake Bay to use as a model for watershed control of nutrient pollution in the Black Sea.[116] Among the findings of the World Bank's research team was "one key lesson that emerges from what has occurred in the Chesapeake Bay Region, is that farmers can indeed

[114] Ibid p 16.
[115] Ibid p 9.
[116] Ibid.

become part of the solution to reversing the decline of the Black Sea even in the face of economic constraints."[117]

In addition to the BMP cost-share programs, tax credits are another method environmentalists (via the state legislatures) used to lessen the financial burden of reducing nutrient pollution on chicken growers. Virginia has an additional BMP program that allows chicken growers to claim a tax credit of 25% of the cost of installation of BMPs, with a maximum credit of $17,500 per year. However, BMPs are not the only legal mechanisms designed to help growers. In light of the new awareness of the plight of chicken growers, both Virginia and Maryland amended their nutrient management programs to lessen the financial burden of compliance. Maryland's program now allows growers who have to switch fertilizer sources to meet their nutrient management plan's requirements to take 50% of the additional cost as a tax credit. As an added benefit, if this credit exceeds the total cost of the farmer's taxes, the excess can be carried over for up to five subsequent tax years. For Virginia growers, the state's program allows growers who have to purchase equipment to meet their plan's requirements to take 25% of the cost of the equipment, up to $3,750, as a tax credit. Even Delaware, the state where the resistance to change in the poultry industry is the strongest, has a program that allows growers to take out low-interest rate loans for poultry-related BMPs.[118]

The rebuilt relationship between CBF environmentalists and chicken growers is directly responsible for the new series of nutrient pollution laws that do not pose a threat to the financial security of chicken growers while still reducing manure runoff from their farms. Prior to 1997, the two groups did not have any mutual dialogue, nor were there any cooperative programs in place. By the early 2000s, the CBF played such an essential role in leading lobbying efforts to

[117] Ibid, p 2.
[118] Ibid p 21.

get growers the financial assistance they needed to reduce the impact of the manure on their farms that the organization became "the leading political force in getting money for conservation practices for farmers."[119] Although working with the DPJA to help growers fight back against the power of the major corporate chicken processors was beneficial for the CBF because it enabled them to design better laws, nutrient reduction was no longer the sole goal of the CBF. Through its interactions with the DPJA, the CBF developed a broader conception of environmental problems. By developing an inclusive vision of ecological problems, the CBF helped pass legislation that not only achieved an environmental goal of reducing nutrient pollution, but also achieved a social goal of helping growers get rid of unwanted manure.

[119] Heller, Michael, Telephone interview with author, 9 July 2008.

6.0 SUCCESSES

The Chesapeake Bay is still imperiled and in critical condition, but one bright spot is the success of environmentalists' and chicken growers' efforts to reduce nutrient pollution from chicken farms. In the decade since the *Pfiesteria* outbreak, the Delmarva Peninsula has seen the largest percentage drop in agricultural nutrient pollution of any of the sub-regions within the Bay's watershed; environmentalists continued to build upon their cooperative relationship with chicken growers; and the combined pressure from these two groups caused Perdue to make important strides towards reducing nutrient pollution. The cooperative relationship between environmentalists and chicken growers has been an integral part of one of the few success stories in Bay restoration.

The best overall indicator of the health of the Chesapeake is the *State of the Bay* (STOB) report, an annual publication by the CBF. The STOB measures the health of the Bay on an index, ranked from 0 to 100, with 100 representing the Bay in pristine condition and with 0 representing the Bay if it were devoid of life. Furthermore, the overall index is broken down into 12 component parts, with nitrogen and phosphorus pollution comprising one of the subcategories. The CBF estimates that the health of the Bay steadily declined until it reached its nadir in the

mid-1980s with an estimated score of 23.* By 2000, the CBF reported that the overall health of the Bay had only increased to 25. The heath of the Bay peaked in 2006 with a score of 29, but dropped a point to 28 in 2007. Although Bay restoration efforts have halted the downward trend of degradation, the Chesapeake is still severely degraded; especially with respect to nutrient pollution, in 2007 nitrogen and phosphorus scored 17 and 23 respectively. The Bay is still so badly impaired that it remains on the EPA's "dirty waters" list. [120]

While the general conditions for the Bay are dire, the STOB report paints too broad a picture. For instance, while overall nutrient levels entering the Bay continue to remain high, reduction of agricultural nutrient pollution in the Bay's watershed is progressing. As of 2005, agricultural nitrogen reduction was at 45% of its target goal and phosphorus was at 49% of its target goal as established by the most recent (2000) *Chesapeake Bay Agreement*. By comparison, urban/suburban nutrient pollution had severely regressed, with nitrogen and phosphorus emissions increasing, pushing nitrogen to -90% and phosphorus to -67% of their goals. The overall low nitrogen and phosphorus scores in the STOB report are due to population growth and urbanization in the region, which have increased nutrient pollution at a rate that far offsets the modest reductions from agricultural sources.[121]

A further analysis reveals how particularly effective the cooperative programs between the CBF and DPJA were at reducing nutrient pollution in the Delmarva Peninsula. Of the eight sub-regions within the Chesapeake Bay watershed, the "Eastern Shore" region—comprised of all of the Delmarva that falls within the Bay's watershed and a small corner of Pennsylvania—

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* The first STOB report appeared in 1998; the CBF made estimates about years prior to that.

[120] *2007 State of the Bay*, Chesapeake Bay Foundation, Annapolis: Chesapeake Bay Foundation, 2007, 8 Dec 2007, <http://www.cbf.org/site/DocServer/2007SOTBReport.pdf?docID=10923>.

[121] Satterfield, Bill, "Delmarva's Poultry Industry and Environmental Protection," PowerPoint, Delmarva Poultry Industry, Inc., 2007, < http://www.dpichicken.org/download/poultrysummit.ppt>.

showed the greatest percentage reduction in nutrient pollution since 1985.[122] The reason the Eastern Shore has the greatest percentage reduction in nutrient pollution is that chicken growers in the Delmarva are the only growers who are in 100% compliance with their nutrient management plans.[123] Farmers in other regions of the watershed, particularly Pennsylvania and Virginia, have not been as compliant as Delmarva chicken growers, and this is largely because there is not a working relationship between environmentalists and farmers in those regions. The fact that all the growers in the Eastern Shore are in compliance with their nutrient management plans is even more impressive when one considers that Maryland's pollution regulations are far more complex and comprehensive than either Virginia's or Pennsylvania's, yet Eastern Shore chicken growers have still met the requirements of their nutrient management plants.[124]

In addition to financial support from state legislation, the coalition of chicken growers and environmentalists has been able to apply enough public pressure to the chicken processors to convince them to support a number of voluntary programs that help the growers get rid of manure. Since 1999, chicken companies in the Delmarva have voluntarily spent $2 million to transport over half a million tons of manure out of the region. While this is a small fraction of the total manure production, it is a step in the right direction. However, the most impressive move by a chicken company belongs to Perdue, which spent $13 million to build the world's largest and most sophisticated manure recycling facility in Sussex County, Delaware, not far from where the chicken industry began with Cecile Steele's homegrown chickens.[125]

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[122] Blankenship, Karl, "Chesapeake Cleanup Update: Reductions in nutrient, sediment loads need to be accelerated," *The Bay Journal*, January 2007, 8 June 2008, <http://www.bayjournal.com/article.cfm?article=2981>.
[123] Satterfield, Bill, "Delmarva's Poultry Industry and Environmental Protection," PowerPoint, Delmarva Poultry Industry, Inc., 2007, < http://www.dpichicken.org/download/poultrysummit.ppt>.
[124] Ibid.
[125] "About Perdue AgriRecycle," *Perduce AgriRecycle, LLC*, 2006, Perdue AgriRecycle, 8 June 2008, <http://www.perdueagrirecycle.com/about.html>.

Responding to public pressure from the CBF and DPJA, Perdue collaborated with AgriRecycle* to create a chicken manure processing facility in the Delmarva Peninsula. The PerdueAgriRecycle facility can process the waste from 400 poultry houses a year, and much of the finished fertilizer is shipped out of the region for use elsewhere.[126] Since 2003, the facility has removed roughly 200,000 tons of manure from the Delmarva Peninsula. One particularly meritorious aspect of this program is that Perdue will accept chicken manure from any grower, regardless of whether or not they have a contract with Perdue. Furthermore, the finished product is certified organic fertilizer that improves the moisture and nutrient retention capacity of the soil. Perdue has also been active in supporting research to find alternative uses for manure, such as burning it as fuel, or gasification processes that use anaerobic digestion to turn the manure into clean-burning natural gas.[127]

The coalition of environmentalists and chicken growers led to legislative and corporate changes that made it possible for Delmarva growers to meet their nutrient management goals. While the successes in the Delmarva are important, the region as a whole only contributes about 8% of the total nutrient load to the Bay.[128] If environmentalists want to see a reduction of nutrient pollution across the board, the principles of cooperation that led to successes in the Delmarva will need to be applied elsewhere, and there are encouraging signs that the transformation in the relationship of chicken growers and environmentalists is spreading beyond the Delmarva Peninsula. In November of 2007, behind the strength of an "unprecedented

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* AgriRecycle is a company that specializes in processing and refining manure for sale as a safe, environmentally friendly fertilizer.

[126] Ibid.

[127] Satterfield, Bill, "Delmarva's Poultry Industry and Environmental Protection," PowerPoint, Delmarva Poultry Industry, Inc., 2007, < http://www.dpichicken.org/download/poultrysummit.ppt>.

[128] Ibid.

coalition of chicken growers and environmentalists,"[129] the Virginia state legislature passed two crucial measures designed to help growers meet their nutrient reduction goals.

Much like the legislation Maryland promulgated in the early and mid-2000s, Virginia's legislation differs from earlier laws in two respects; it reflects an understanding of the need to make the chicken companies accountable for their birds' manure and the need to help growers get rid of their excess manure. The first of Virginia's measures concerns incorporating the chicken companies into the cleanup process. Virginia's largest poultry producers—Tyson and Perdue among others—signed an agreement with the state to optimize the use of phytase in chicken feed. While the companies have been using phytase in their feed since 2000, this most recent agreement has an ambitious goal of optimizing phytase use to reduce phosphorus in chicken manure by 30% by 2010. This agreement is critical because growers have no control over what the chickens are fed; the only way to maximize the effect of phytase is to convince the chicken companies to agree to change the composition of their feed.[130]

The other piece of legislation passed in November of 2007 was a joint plan between the growers, Virginia, and the chicken companies to transport manure out of regions with high concentrations of chicken farms. Virginia and the major poultry processors in the state agreed to a plan that would pay growers $5 per ton of manure they send outside of their home counties and $12 per ton of manure they send outside of the Chesapeake Bay watershed. Although $12 may not seem like much, that $12 goes on top of the $25-$35 a grower may receive per ton of manure, which serves as a strong incentive to find markets outside of the watershed for sale of manure. The Virginia legislation was possible because of a unique alliance between the Virginia

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[129] Lynch, Patrick, "Pushing for bay cleanup funds," *Dailypress.com*, <http://www.dailypress.com/news/local/dp-news_farmfunding_1219dec19,0,118680.story>.
[130] Staff And Wire Reports, "VA Poultry Industry to Increase Use of Phytase," *The Bay Journal*, Dec. 2007, 22 Dec. 2007 <http://www.bayjournal.com/article.cfm?article=3218>.

Poultry Federation and environmental groups such as the CBF, Sierra Club, and others. The growers and environmentalists worked together to lobby the state legislature for these measures which provide the resources that will help growers meet their nutrient reduction goals.[131]

Perhaps the most encouraging sign of all is that the environmentalists' broader social vision has started to include the entire agricultural community. The most important example of a broader coalition developing between environmentalists and farmers is their combined lobbying efforts of throughout the Bay's watershed for the 2008 Farm Bill. The Farm Bill may have severe flaws, but one positive is that the Farm Bill gives record appropriations to farmers for conservation practices in the Chesapeake Bay watershed. Historically, Farm Bills are not kind to farmers in the Bay's watershed. The national average of federal agricultural funding per dollar in production is six cents. Up until the most recent Farm Bill, Chesapeake farmers averaged only four cents on the dollar, while at the other end of the spectrum, farmers in North Dakota receive three times more federal farm funding than their Chesapeake counterparts.[132]

A critical reason why farmers in the Bay region have struggled to obtain a fair share of the nation's agricultural funding is that the politics of the region were extremely fragmented. In lobbying for previous versions of the Farm Bill, Chesapeake Bay environmentalists worked with other environmental groups around the country; likewise, chicken growers and other farmers worked with their industrial counterparts in other regions. By early 2007, the CBF had put together a broad coalition of environmental groups and agricultural groups that worked together to lobby politicians throughout the watershed. That May, Senator Barbara Mikulski (D-MD) and Representative Chris Van Hollen (D-MD) introduced the Chesapeake Healthy and

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[131] Ibid.
[132] *Vital Signs: Assessing the State of Chesapeake Agriculture in 2005*, Chesapeake Bay Foundation, Annapolis: Chesapeake Bay Foundation, 2005, 15 Oct. 2007, <http://www.cbf.org/site/DocServer/StateOfAg.pdf?docID=4343>.

Environmentally Sound Stewardship of Energy and Agriculture Act of 2007 (CHESSEA) to the Senate and House, respectively. The result of CBF-led watershed-wide cooperation and coordination between environmentalists and farmers, CHESSEA provides the most federal appropriations ever for conservation practices in the Bay region. The previous Farm Bill (2002) allocated roughly $80 million in conservation funding for the Bay, whereas CHESSEA, as a part of the 2008 Farm Bill, more than triples that amount at $280 million in funding for Chesapeake growers, farmers, and environmentalists.[133]

Although the money will be a huge boost to conservation in the watershed, the most positive sign for conservation one can take from the Farm Bill is the high degree of cooperation between environmentalists and farmers, which by combining their lobbying efforts were able to generate never-before-seen levels of support for Chesapeake Bay funding. Remarkably, support for CHESSEA was genuinely bipartisan. Nine of the 22 House cosponsors were Republicans, and prominent Senate Republicans such as John Warner and Arlen Specter were Senate cosponsors. Although they were the only two Republican cosponsors, they are the only two Republican senators in the Bay's watershed. Especially for an environmental bill, CHESSEA had a high degree of bipartisan support. The combination of environmentalists and farmers enabled the coalition to pressure legislators on both sides of the aisle, resulting in much stronger federal support for conservation in the Chesapeake Bay watershed.[134]

The compliance of Delmarva Peninsula chicken growers with their nutrient management plans, the involvement of major chicken companies in manure cleanup efforts, and expanded legislative programs on the state level in Virginia and at the federal level with the most recent

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[133] Baker, Dr. William C, "CHESSEA Vital to Health of Chesapeake's Water, Farms," *The Bay Journal*, May 2007, 12 Nov 2007, <http://www.bayjournal.com/article.cfm?article=3093>.
[134] Ibid.

Farm Bill are all signs that the cooperative style of environmentalism can be a viable alternative to top-down methods beyond the limited scope of Delmarva chicken growers. Although these successes should be lauded, they do not change the fact that the Chesapeake Bay is dangerously imperiled. Habitat loss, overharvesting of fish and shellfish, and overpopulation in the region all complement nutrient pollution as serious threats to the Bay. Nutrient pollution alone comes from a myriad of sources, and no one strategy is sufficient to rein in nutrient pollution, much less the complex and dynamic set of problems facing the Bay. Top-down strategies will have their place in environmental policy, but they cannot be the sole weapon in environmentalists' arsenal.

If environmentalists are to succeed in cleaning up the Bay, they will need solutions based on a broader conception of the nature of the causes of ecological problems. Laws designed to control nutrient pollution from chicken farms in the 1980s and early 1990s did not work because environmentalists did not understand the plight of the growers or the inner workings of the chicken industry. Once the CBF began to work with the DPJA and learn about the position of the growers and the operation of the chicken industry, the organization was able to advocate for legislation that was tailored to suit the specifics of the problems within the industry; namely, the financial weaknesses of the growers and lack of assistance or accountability from the major chicken companies. These new, more enlightened laws have led to one of the great success stories for the Bay, the reduction of nutrient pollution from the Delmarva Peninsula and the development of a broader environmental and social vision for the Chesapeake.

The great French philosopher Voltaire once said, "History is nothing more than a tableau of crimes and misfortunes." With all due respect to the man's genius, he could not have been more wrong in this regard. The Chesapeake Bay's environmental history is an intricate tableau that has only begun to be written, but it already contains a number of positive success stories,

among them, the evolution of the relationship between environmentalists and chicken growers. In a little over a decade, these two groups went from being “at war” with one another to working in conjunction at the state and national levels to produce legislation that succeeded at reducing nutrient pollution from chicken farms because it was crafted with an understanding of the resources and tools chicken growers needed. As the cooperative spirit between environmentalists and growers spreads beyond the initial sparks started by the CBF and DPJA, it can help the environmentalists in the Bay to continue building a new history of progress and success that is as inspirational as the Bay itself.

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